

as is well-known to one of ordinary skill in the art," is merely conclusory and hence insufficient to satisfy the standard of *In re Sang Su Lee*. Thus, the office action fails to state a *prima facie* case of obviousness with respect to claim 1.

Claim 1 also recites, "depositing a seed layer *on the barrier layer*" (emphasis added). The office action on page 2 cites to Figure 5 of Dubin et al. and recites, "depositing a seed layer 25 on the barrier layer 22, as shown in Fig. 5 and recited on Col.4/l1 29-39" in support of the obviousness rejection. Applicant respectfully submits that the office action is in error in that the seed layer 25 is not shown in Figure 5 of Dubin et al., however, the seed layer 25 is shown in Figure 3 of Dubin et al. Thus, Dubin et al. in Figure 3 and at column 4, lines 16-39, teach a copper-aluminum alloy film 24 deposited on a diffusion barrier layer 22 and a copper seed layer 25 deposited *on the copper-aluminum alloy film 24*. Hence, Dubin et al. do not teach or suggest, "depositing a seed layer *on the barrier layer*," as recited in claim 1. Thus, the office action fails to state a *prima facie* case of obviousness with respect to claim 1.

In reference to claim 1, the office action at page 3 states that claim 1 does not preclude the copper-aluminum alloy film 24. Applicant respectfully submits that the question for determining obviousness is not whether claim 1 precludes the copper-aluminum alloy film 24, but whether the references teach or suggest each of the claimed elements. Claim 1 recites "depositing a seed layer *on the barrier layer*" (emphasis added). Since claim 1 recites "depositing a seed layer *on the barrier layer*," a reference, such as Dubin et al., that teaches a copper-aluminum alloy film deposited on the barrier layer and *a seed layer being deposited on the copper-aluminum alloy film* does not teach or suggest "depositing a seed layer *on the barrier layer*." Thus, the office action fails to state a *prima facie* case of obviousness with respect to claim 1.

Claim 1 also recites, "depositing a conductor on the seed area by a selective deposition process *after* removing the barrier layer and seed layer from *selected areas of the insulator*" (emphasis added). In contrast, Dubin et al. teach, as shown in Figure 3 and Figure 4, depositing a plated copper layer 36 *before* removing the barrier layer and seed layer from selected areas of the insulator. Hence, Dubin et al. do not teach "depositing a conductor on the seed area by a selective deposition process *after* removing the barrier layer and seed layer from selected areas of

the insulator" (emphasis added). Also, in contrast, Brown et al. teach at Fig. 4A removal of the barrier layer 400A and the seed layer 400B from the *conductive layer* 415. (The barrier layer 400A and the seed layer 400B are deposited on the mask 407 and then removed when the mask is removed from the surface of the *conductive layer* 415.) So, Brown et al. does not teach "depositing a conductor . . . after removing the barrier layer and seed layer from *selected areas of the insulator*" (emphasis added). Hence, neither Dubin et al. nor Brown et al., either alone or in combination, teach or suggest each of the elements of claim 1. Thus, the office action fails to state a *prima facie* case of obviousness with respect to claim 1.

In reference to claim 1, the office action at page 3 states, "it is noted that the Brown et al. reference teaches the step of removing the barrier and seed layers from selected *areas* prior to the deposition of the conductor in order to form a seed area where the conductor is deposited" (emphasis added). However, applicant respectfully submits that claim 1 recites, "depositing a conductor on the seed area by a selective deposition process after removing the barrier layer and seed layer from *selected areas of the insulator*" (emphasis added). Since Brown et al. teaches removing the barrier layer completely, as can be seen in FIG. 4A, along with the mask 407 from the surface of the conductor 415, Brown et al. does not teach or suggest removing the barrier layer from "selected areas of the insulator," as recited in claim 1. The reason for this is that the barrier layer in Brown et al. is deposited on the mask 407, as shown in FIG. 4A, and not on the insulator 410. Hence, Brown et al. does not teach or suggest "depositing a conductor on the seed area by a selective deposition process after removing the barrier layer and seed layer from *selected areas of the insulator*" (emphasis added). Thus, the office action fails to state a *prima facie* case of obviousness with respect to claim 1.

Therefore, applicant requests withdrawal of the rejection and reconsideration and allowance of claim 1.

Claims 4, 8, 12, 15, 19, 23, 27, 30, 34, 38, 42, 45, 50 and 56 recite elements similar to the elements recited in claim 1. For reasons analogous to those provided above with respect to claim 1 and elements in the claims, applicant respectfully submits that the office action fails to state a *prima facie* case of obviousness with respect to claims 4, 8, 12, 15, 19, 23, 27, 30, 34, 38, 42, 45, 50 and 56.

Therefore, applicant requests withdrawal of the rejections and reconsideration and allowance of claims 4, 8, 12, 15, 19, 23, 27, 30, 34, 38, 42, 45, 50 and 56.

Claims 2-3 are dependent on claim 1, claims 5 and 7 are dependent on claim 4, claims 9-11 are dependent on claim 8, claim 14 is dependent on claim 12, claims 17-18 are dependent on claim 15, claims 20 and 22 are dependent on claim 19, claims 25 and 26 are dependent on claim 23, claim 29 is dependent on claim 27, claims 32-33 are dependent on claim 30, claims 36-37 are dependent on claim 34, claims 40-41 are dependent on claim 38, claim 44 is dependent on claim 42, claims 47-49 are dependent on claim 45, claims 52-55 are dependent on claim 50, and claims 58-60 and 62-65 are dependent on claim 56. For reasons analogous to those provided above and elements in the claims, applicant respectfully submits that the office action fails to state a *prima facie* case of obviousness with respect to the recited claims.

Therefore, applicant requests withdrawal of the rejections of claims 2-3, 5, 7, 9-11, 14, 17-18, 20, 22, 25, 26, 29, 32-33, 36-37, 40-41, 44, 47-49, 52-55, 58-60 and 62-65 and reconsideration and allowance of claims 2-3, 5, 7, 9-11, 14, 17-18, 20, 22, 25, 26, 29, 32-33, 36-37, 40-41, 44, 47-49, 52-55, 58-60 and 62-65.

Claims 6 and 66 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin et al. in view of Ting et al. and Brown et al. as applied to claims 1-5, 7-12, 14-15, 17, 19-20, 23, 25, 27, 29-30, 32, 34, 36, 38, 40, 42, 44-45, 47, 50, 52, 54, 56, 59, 60, 62, 65 and 72 above, and further in view of Farkas et al. (U.S. 6,001,730), as previously applied. Applicant does not admit that Dubin et al. is prior art, that Ting et al. is prior art, that Brown et al. is prior art or that Farkas et al. is prior art. Applicant traverses the rejections of claims 6 and 66.

Claims 6 and 66 are dependent on claims 1 and 56, respectively. Applicant respectfully submits that claims 1 and 56, as argued above, are in condition for allowance. Thus, claims 6 and 66 should be in condition for allowance.

Therefore, applicant requests withdrawal of the rejections and reconsideration and allowance of claims 6 and 66.

Claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, 61, and 67-77 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dubin et al. in view of Ting et al. and Brown et al., and further in view of Nogami et al, as previously applied. Applicant does not admit that Dubin

31, 35, 39, 43, 46, 51, 57, 61 and 67-77. Teaching away is a factor considered in deciding whether the references include a teaching, suggestion or motivation to combine. Since Dubin et al. teaches away for the above argued claims, applicant respectfully submits that the references fail to provide a teaching suggestion or motivation to combine. Thus, the office action fails to state a *prima facie* case of obviousness with respect to claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, 61 and 67-77.

Therefore, for the reasons provided above and elements in the claims, applicant requests withdrawal of the rejections and reconsideration and allowance of the claims 13, 16, 21, 24, 28, 31, 35, 39, 43, 46, 51, 57, 61 and 67-77.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney 612-371-2109 to facilitate prosecution of the application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

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Date August 21, 2002

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 21st day of August, 2002.

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